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10/053,179	01/15/2002	Kenneth L. Stanwood	WIL 3009	2846

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EXAMINER	
SEFCHECK, GREGORY B	
ART UNIT	**PAPER NUMBER**
2477	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/053,179	Applicant(s) STANWOOD ET AL.	
	Examiner GREGORY B. SEFCHECK	Art Unit 2477	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _10 December 2009_.

2a)☐ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _51-75 and 82-96_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _51-75 and 82-96_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

- Applicant's Pre-Appeal Request filed 12/10/2009 is acknowledged.
- Claims 1-50 and 76-81 have been previously cancelled.
- Claims 51-75 and 82-96 remain pending.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 51-55, 63-67, 75, 82-89, and 90 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kordsmeyer et al. (US006963751B1), hereafter Kordsmeyer, in view of Van Grinsven et al. (US20010015985A1), hereafter Van Grinsven.

- Regarding claims 51, 63, 75, 84, and 89,

Kordsmeyer discloses a method and wireless communication system in which service data units (SDU) are packed and fragmented into protocol data units (PDU) having an ELT (header) and DAF (payload; Abstract; Background; Fig. 1-2; claim 51,63,89 – node/base station/method in a communications system, that packs and fragments service data units over a communications link as a protocol data unit having a payload area and a header area; claim 51,63,89 – pack and fragment service data

units into payload of protocol data units; claim 51,63,89 – means for mapping a first service data unit to the payload area of a protocol data unit).

Kordsmeyer discloses SDU4 and a fragment FR3 of SDU5 is stored in the payload of PDU5, along with INFs (subheaders) specifying the length of the SDUs in the DAF of the PDU in order to fully utilize the DAF of each PDU, with corresponding INFs to indicate the fragmentation state of the DAF - the first/continuing/end fragment and length of each SDU (Fig. 2; Col. 8-9, lines 47-23; claim 51,63,89 - wherein the payload area of the protocol data unit comprises a corresponding packing subheader specifying the length of each packed service data unit; claim 51,63,89 – means for determining whether a second service data unit is larger than the remaining payload area of the protocol data unit; claim 51,63,89 - if the second service data unit is not larger than the remaining payload area of the protocol data unit, then means for mapping the second service data unit to the remaining payload area of the protocol data unit; claim 51,63,89 - if the second service data unit is larger than the remaining payload area of the protocol data unit, then means for fragmenting the second service data unit into at least two fragments and means for mapping the first fragment to the payload area of the protocol data unit; claim 89 - subheader fragmentation control field indicating whether the corresponding service data unit is a first fragment, a continuing fragment, a last fragment or an unfragmented service data unit).

Kordsmeyer discloses SDUs and PDUs are associated with a specific user connection/session (corresponding ELT of each PDU; Col. 1, lines 20-65; claim

51,63,89 – PDU and SDU associated with a specific user connection; claim 75 - header area of protocol data unit comprises a connection identifier field).

Kordsmeyer discloses fixed length PDUs. Thus, Kordsmeyer does not explicitly disclose establishing the length of a variable length PDU in conjunction with the bandwidth allocated to the connection, or indicating such length in the header of the PDU.

Van Grinsven discloses a transmission system with a flexible frame structure (Title) in which packing and fragmenting of SDUs into variable length PDUs. Van Grinsven discloses that the length of the PDU is based upon the size of the packet to be transmitted (i.e. bandwidth allocated to a connection) and changes when the size of the packet changes, where each packet is associated with a connection (Fig. 4; paragraphs 41, 42, 55; claim 51,63,89 – length of PDU is established in conjunction with the bandwidth allocated to the specified connection).

Van Grinsven further shows that the size of each respective PDU is included in the header of the PDU (4 bit "size" field; paragraph 41; claim 51,63,89 - wherein the header area of the protocol data unit comprises a length field).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Kordsmeyer by packing and fragmentation of SDUs into variable-length PDUs, based upon the bandwidth utilized for each specific connection, as shown by Van Grinsven, while specifying the PDU length in the header, thereby enabling

adaptation and optimization of connection bandwidth of different protocols having different PDU requirements.

- Regarding claims 52 and 64,

Kordsmeyer discloses a method and wireless communication system meeting all limitations of the parent claims.

Kordsmeyer discloses transmission of the PDUs as messages (frames) over a wireless connection (Col. 1, lines 20-60; claim 52,64 - transmitter to map the protocol data units into frames and transmit the frames).

- Regarding claims 53 and 65,

Kordsmeyer discloses a method and wireless communication system meeting all limitations of the parent claims.

Kordsmeyer discloses SDUs of various service data - voice and/or packet data (Col. 1, lines 60-65; claim 53,65 – service data units have more than one format).

- Regarding claims 54, 55, 66, 67, 82, and 90,

Kordsmeyer discloses a method and wireless communication system meeting all limitations of the parent claims.

Kordsmeyer discloses INFs (subheaders) specifying the length of each SDU or fragment thereof in the DAF of each PDU in order to fully utilize the DAF of each PDU, with corresponding INFs to indicate the fragmentation state of the DAF as the

first/continuing/end fragment and length of each SDU (Fig. 2; Col. 8-9, lines 47-23; claim 54,66 - packing subheader further comprises a fragmentation control field specifying whether the protocol data unit includes a service data unit fragment; claim 82 - first SDU is a last fragment of a SDU).

Kordsmeyer shows the INFs may include information items IN1-IN3, whereas IN1-IN3 indicates whether the DAF of the PDU includes at least a fragment of more than one SDU (claim 55,67 - fragmentation control field comprises at least two bits).

Kordsmeyer shows that the INF does not necessarily include each of IN1-IN3, making the INF variable in length (Col. 3, lines 10-46; claim 90 – length of packing subheaders is variable).

- Regarding claims 83 and 84,

Kordsmeyer discloses a method in a wireless communication system in which service data units (SDU) are packed and fragmented into protocol data units (PDU) having a header and data field (payload), the SDUs and PDUs associated with a specific user connection (ELT of each PDU; Col. 1, lines 20-65; Abstract; Background; Fig. 1-2; claim 83 – method of formatting protocol data units (PDUs) from incoming service data units (SDUs) for transmission of data carried by the FDUs over a communication channel shared by one or more user connections).

Kordsmeyer discloses PDUs include an ELT (header) and DAF (payload) based upon the varied services provided over the bandwidth of wireless connections between

data sources and data sinks according to a particular protocol (Fig. 2; Col. 1, lines 20-65; claim 83 - provisioning a protocol data unit (PDU), including a header and a payload area).

Kordsmeyer discloses SDU4 and a fragment FR3 of SDU5 is stored in the payload of PDU5, along with INFs (subheaders) specifying the length of the SDUs in the DAF of the PDU in order to fully utilize the DAF of each PDU, with corresponding INFs to indicate the fragmentation state of the DAF - the first/continuing/end fragment and length of each SDU (Fig. 2; Col. 8-9, lines 47-23; claim 83 - packing and fragmenting the SDUs associated with the user connection into the payload area of the PDU based on the length of the payload area).

Kordsmeyer does not explicitly disclose a variable length PDU, the length established in conjunction with the bandwidth allocated currently to the user connection and changing as the allocated bandwidth changes.

Van Grinsven discloses a transmission system with a flexible frame structure (Title) in which packing and fragmenting of SDUs into variable length PDUs. Van Grinsven discloses that the length of the PDU is based upon the size of the packet to be transmitted (i.e. bandwidth allocated to a connection) and changes when the size of the packet changes, where each packet is associated with a connection (Fig. 4; paragraphs 41, 42, 55; claim 83 – length of PDU is established in conjunction with the bandwidth

allocated to the specified connection; claim 84 – length of PDU changes as the bandwidth allocated to the specified connection changes).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Kordsmeyer by packing and fragmentation of SDUs into variable-length PDUs based upon the packet size (bandwidth) required for a connection, as shown by Van Grinsven, thereby enabling adaptation and optimization of connection bandwidth of different protocols having different PDU requirements.

- Regarding claims 85-88,

Kordsmeyer discloses a method and wireless communication system meeting all limitations of the parent claims.

Kordsmeyer discloses how subsequent SDUs are packed and fragmented into PDUs in order to fully utilize the DAF of each PDU, with corresponding INFs to indicate the fragmentation state of the DAF - the first/continuing/end fragment and length of each SDU (Fig. 2; Col. 8-9, lines 60-2; claim 85 - mapping one or more SDUs into the payload area of the PDU until a remaining area in the payload area of the PDU cannot accommodate a next SDU; claim 85 - fragmenting the next SDU into a first and a second fragment, the first fragment having the length of the remaining area; claim 85 - mapping the first fragment to the remaining area; claim 85 - inserting fragmentation header information to indicate the fragmentation state of the payload and to identify the first fragment as being a first fragment; claim 86 - any SDU fragment

includes a fragmentation control field identifying the SDU fragment; claim 87 - mapping the second fragment to a next PDU if the length of the second fragment fits into the length of the payload area of the next PDU; claim 87 - inserting fragmentation control information to indicate the fragmentation state of the payload and to identify the last fragment as being a last fragment; claim 88 - further fragmenting the second fragment if the length of the second fragment is larger than the length of the payload area of a next PDU to obtain a third fragment having the length of the payload area of the next PDU; claim 88 - mapping the third fragment to the next PDU; claim 88 - inserting fragmentation control information, to indicate the fragmentation state of the payload and to identify the third fragment).

3. Claims 56 and 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kordsmeyer in view of Van Grinsven as applied to claims 51 and 63 above, and further in view of Sengodan et al. (US006918034B1), hereafter Sengodan.

- Regarding claims 56 and 68,

Kordsmeyer discloses a method and wireless communication system meeting all limitations of the parent claims.

Kordsmeyer discloses transmission of SDU fragments in sequential PDUs, but does not explicitly disclose a fragment sequence number in the packing subheader.

Sengodan discloses transferring mobile telephony service data using IP protocol packets (Fig. 1, 3; Col. 1, lines 15-17, 40-52; Col. 3, lines 22-43). Sengodan discloses

mapping mini-packets MPs into the payload of a single RTP/UDP/IP packet, where each MP has a corresponding mini-header that includes a length indicator LI of the MP and 2 bit sequence number for marking the order of mini-packets within the IP packet(s) from a single user (claim 56,68 - packing subheader further comprises a fragment sequence number).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include a fragment sequence number in the packing subheader of Kordsmeyer, as shown by Sengodan, thereby ensuring proper reception and decoding of the service data in a system in which sequential transmission and reception of service data is not guaranteed.

4. Claims 57-62 and 69-74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kordsmeyer in view of Van Grinsven as applied to claims 51 and 63 above, and further in view of Caronni et al. (US006970941B1), hereafter Caronni.

- Regarding claims 57-62 and 68-74,

Kordsmeyer discloses a method and wireless communication system meeting all limitations of the parent claims.

Kordsmeyer discloses the use of encryption, but does not explicitly disclose an encryption control/key field in the header of the PDU comprising at least two bits. Kordsmeyer also shows how IN1-IN3 indicates whether the DAF of the PDU includes at

least a fragment of more than one SDU, but does not explicitly disclose a subheader present field in the PDU header.

Referring to Fig. 6, Caronni discloses a system and method in an IP network in which a supernet header 620 includes a field 624 for storing encyption key (control) information). Caronni discloses a key for each channel (Col. 5, lines 36-38; Col. 6, lines 1-4), thereby necessitating at least two bits to represent the key in a system with more than two channels shown in Kordsmeyer and Van Grinsven (claim 59,61,71,73 - header area of the protocol data unit comprises an encryption control/key field; claim 60,62,72,74 - encryption control/key field comprises at least one/two bits).

Additionally, Caronni discloses next header fields that indicate the presence of additional headers prepended to the packet payload (claim 57,69 - wherein the header area of the protocol data unit comprises a packing subheader present field; claim 58,70 - wherein the packing subheader present field comprises at least one bit).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Kordsmeyer and Van Grinsven by implementing encryption control/key fields and subheader present fields, as shown by Caronni. This would provide security and further bandwidth optimization in implementing selective fragmentation and packing of SDUs into PDUs shown by Kordsmeyer.

5. Claims 91-94 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kordsmeyer in view of Van Grinsven as applied to claim 51 above, and further in view of Hathaway et al. (US20020126677A1), hereafter Hathaway.

- Regarding claims 91-94,

Kordsmeyer discloses processing of service data of voice and data, but does not explicitly disclose classifying them based on a connection identifier using specific control protocols, a convergence layer for establishment maintenance and transfer of the service or data queuing based on the connection identifier and individual characteristics.

Hathaway discloses a packet processing system that receives, classifies and separately queues different types of data using specific control protocols based upon connection identifier (Fig. 2-3B, 5; paragraphs 12-13; claim 91 - classification module for classifying the SDUs based on at least a connection identifier, for enabling packing and fragmenting of the SDUs on the connection in a PDU allocated to that connection; claim 92 - classification module uses control protocols specific to each particular type of SDU being classified; claim 94 - data queuing module wherein the SDUs are sorted based on the connection identifier and individual characteristics).

Hathaway further discloses convergence between CPS packets, AAL2 cells and PDUs as well as channel identifier mapping performing connection establishment, maintenance and data transfer (Fig. 6; claim 93 - convergence sublayer module that processes the SDUs classified by the classification module for service specific connection establishment, maintenance, and data transfer operations).

It would have been obvious to one of ordinary skill in the art at the time of the invention by modifying Kordsmeyer by enabling classifying and separately queuing

different types of data using specific control protocols based upon connection identifier and convergence of the different data types for channel mapping purposes, as shown by Hathaway, thereby permitting adaptive processing of various protocol types by the same system.

6. Claims 95 and 96 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kordsmeyer in view of Van Grinsven and Hathaway as applied to claim 91 above, and further in view of Payne, III (US20060062250A1), hereafter Payne.

- Regarding claims 95 and 96,

Kordsmeyer does not explicitly disclose a bandwidth allocation map with the bandwidth allocated to each node sharing the communication channel or establishing the bandwidth allocated to each connection from the bandwidth currently allocated to a respective node based on the priority and type of the connections served by the node.

Payne discloses support for multiple frame types in which a bandwidth allocation map is defined for each subscriber unit over a shared medium, including linked priority queuing (Title; Fig. 13; paragraph 94; claim 95 - communication control module which prepares a bandwidth allocation map with the bandwidth allocated to each node sharing the communication channel; claim 96 - communications processor establishes the bandwidth allocated to each connection from the bandwidth currently allocated to a respective node based on the priority and type of the connections served by the node).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Kordsmeyer by defining bandwidth allocations to subscriber units in consideration of the priority and type of data for a connection, as shown by Payne. This would permit the handling of different protocol data having different priorites, such as the voice and data disclosed by Kordsmeyer.

Response to Arguments

7. Applicant’s arguments filed 12/10/2009, with respect to the rejection(s) of claim(s) 83 and 85-88 under 35 USC 102 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Van Grinsven.

8. Applicant's arguments filed 12/10/2009 regarding the rejections in view of Van Grinsven have been fully considered but they are not persuasive.

- In the Remarks on pg. 3-4 of the Pre-Appeal Request, Applicant contends that Van Grinsven does not disclose establishing the length of variable length PDUs based on the currently allocated bandwidth of a connection. Rather, Applicant alleges Van Grinsven determines PDU length based on the size of the incoming packet.
- As now shown in the rejection, it is agreed that Van Grinsven discloses establishing the length of a PDU based upon the size of the incoming packet.

However, contrary to Applicant's view, the size of an incoming packet in Van Grinsven is considered equivalent to the "bandwidth currently allocated to a connection", as claimed. Since each incoming packet in Van Grinsven and Kordsmeyer is associated with a connection, the size of the incoming packet represents the current allocation of bandwidth to that connection. Since Van Grinsven shows that PDU size may change as the size of packets change, the disclosure of Van Grinsven illustrates establishing the length of a variable length PDU based upon the currently allocated bandwidth. Modifying Kordsmeyer with this disclosure of Van Grinsven, as shown in the rejection, properly meets all of the claimed limitations. Therefore, the claim rejections are proper.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GREGORY B. SEFCHECK whose telephone number is (571)272-3098. The examiner can normally be reached on Monday-Friday, 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chirag Shah can be reached on 571-272-3144. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Gregory B Sefcheck/
Primary Examiner, Art Unit 2419
2-3-2010